

GUJRAT ENERGY TRANSMISSION CORPORATION LTD.

STANDARD APPROVAL

STANDARD MANUFACTURING QUALITY PLAN

GETCO/CE(Engg)/IIII/D/O-006499
Date:06.04.2021

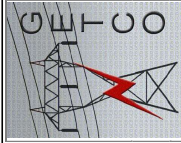
MATERIAL DESCRIPTION : STANDARD MQP GALVANIZED STEEL STRUCTURES FOR GETCO SUPPLY

QAP No.	GETCO STANDARD APPROVAL		Rev. No	Date	Page No
GETCO/MQP/20-21/TOWER&SS STRUCTURES	STANDARD MQP HDG TOWER & SS STRUCTURES UPTO 400KV		0	20.11.2020	1 of 13

1. RAW MATERIAL INSPECTION

S.No	Component / Operation & Description of Test	Sampling Plan with basis	Ref. Doc & Acceptance norm	Record Format	Testing Agency			Remarks
					M	C	TP/A	
1	Raw Materials							
1.1	Structural Steel (Angles, Flats, Plates, Channels and Bars) as per IS 2062 Pipe – IS 1161 /1239		IS 2062 E-350 For HT IS 2062 E-250 A For MS		"THIS DOCUMENT IS PROPERTY OF GETCO AND SHALL NOT BE USED OR PASSED ON TO OTHERS WITHOUT WRITTEN CONSENT OF GETCO"			Steel to be procured from prime producers such as SAIL, TISCO, RINL, JINDAL etc. or GETCO approved reroller.
1.1.1	Physical Properties/ Mechanical properties		IS 2062 : 2011					
(a)	Tensile strength	1 Sample/ 40 MT for each type.	Annexure-A	MTC	P	R	-	MTC review at the time of final inspection
(b)	Test For Yield Stress	- Do -	- Do -	MTC	P	R	-	- Do -
(c)	Percentage Elongation	- Do -	- Do -	MTC	P	R	-	- Do -
(d)	Bend Test	- Do -	- Do -	MTC	P	R	-	- Do -
(e)	Impact Test	- Do -	For HT Material(BR,B0 and C Grades) as per GETCO approved Structure Drawing/BOM or GETCO approval Letter.	MTC	P	R	-	Min 27J.at Room Temp.25 ±2°C as per IS 2062-2011
1.1.2	CHEMICAL COMPOSITION (Product Analysis)	- Do -	Annexure-A	MTC	P	R	P*	MTC review at the time of final inspection
1.1.3	ZINC Chemical composition of Zinc Ingot	- Do -	IS 209 Zinc purity min 99.99%	TC	P	R	P*	MTC to be reviewed at the time of Final Inspection (Zinc Procured from Prime producer or prior approval from GETCO is required)
1.1.4	VISUAL CHECKS FOR SURFACE FINISH	IS 2500, Level II, AQL-1.5	Material shall be reasonably free from surface flaws; laminations; rough/jagged and imperfect edges and all other harmful defects	IR	P	R	-	MTC review at the time of final inspection
1.1.5	DIMENSIONAL CHECKS	IS 2500 Level II, AQL-1.5	IS 1852, IS 808	IR	P	R	-	MTC review at the time of final inspection

Signature of the Manufacturer:		Signature of the Contractor:		LOA-AT No/Estimate No:	
Name:	Name:	Name:		Name:	
Designation:	Designation:	Designation:		Designation:	
Date :	Date :	Date :		Date :	
Authorised common rubber Stamp / seal of the Manufacturer:	Authorised common rubber Stamp / seal of the Manufacturer:	Authorised common rubber Stamp / seal of the Manufacturer:		Authorised common rubber Stamp / seal of the Manufacturer:	
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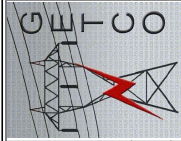
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S.No	Component / Operation & Description of Test	Sampling Plan with basis	Ref. Doc & Acceptance norm	Record Format	Testing Agency			Remarks
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1.1.6	TOLERANCES FOR LEG LENGTH OF ANGLES EQUAL / UN EQUAL	IS 2500 Level II, AQL-1.5.	For $\leq 45\text{mm}$ = $\pm 1.5\text{mm}$ For 45 to 100 = $\pm 2.0\text{mm}$ For >100 = $\pm 2.0\%$ of leg length For unequal leg: +2,-1.5mmfor longer leg length for shorter leg length as per 1.1.7	IR	P	R	-	MTC review at the time of final inspection
1.1.7	OUT OF SQUARE NESS	IS 2500 Level II, AQL-1.5.	Perpendicular to each other $\pm 1^\circ$	IR	P	R	-	
1.1.8	CAMBER or SWEEP	IS 2500 Level II, AQL-1.5.	For $<100= \pm 0.3\%$ of length For $\geq 100= \pm 0.2\%$ of length Max.	IR	P	R	-	
1.1.9	WEIGHT TOLERANCE FOR ANGLE SECTIONS & FLAT	1 Sample/ 40 MT for each type.	For $< 3\text{mm}$ thick $\pm 5\%$ For $> 3\text{mm}$ thick $+5\%$ / -3%	IR	P	R	-	
1.2.0	WEIGHT TOLERANCE FOR PLATES	1 Sample/ 40 MT for each type.	$+ 5/-2.5\%$	IR	P	R	-	
1.2.1	THICKNESS TOLERANCE FOR PLATES	IS 2500 Level II, AQL-1.5.	$< 8\text{ mm}$ thick : $+ 12.5\%$, $- 5\%$ $8\text{ mm} - 12\text{ mm}$: $+ 7.5\%$, $- 5\%$ over 12 mm : $\pm 5\%$	IR	P	R	-	
1.2.2	ROOT RADIOUS	IS 2500 Level II, AQL-1.5.	IS 808 (As per Table 5.1)	IR	P	R	-	
1.2.3	WIDTH TOLERANCE FOR FLAT THICKNESS TOLERANCE FOR FLAT	IS 2500 Level II, AQL-1.5.	IS 1730/1852 $<50\text{mm}$ $\pm 1.0\text{mm}$, $>50<75\text{mm}$ $\pm 1.5\text{mm}$, $>75<100\text{mm}$ $\pm 2.0\text{mm}$, $>100< \pm 2.0\%$,Max 6.0mm Thickness Upto & including $12\text{mm} \pm 5\text{mm}$,Over $12\text{mm} \pm 4\%$ Max. 1.5mm .	IR	P	R	-	"THIS DOCUMENT IS PROPERTY OF GETCO AND SHALL NOT BE USED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF GETCO."

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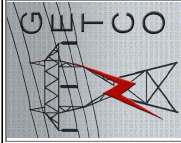
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1.2.4	ROUND BARS a. Diameter(d) Tolerance	IS 2500 Level II, AQL-1.5.	IS 1852 d<25mm ± 0.5 mm, 25<d<35mm ± 0.6 mm, 35<d<50mm ± 0.8 mm, 50<d<80mm ± 1.0 mm, 80<d<100mm ± 1.3 mm, 100<d< ± 1.6 % of Diameter or side width.	IR	P	R	-	MTC review at the time of final inspection
	b. Ovality & out-of-Square	- Do -	IS 1852 The permissible ovality for round bars measured as the difference between the maximum and minimum diameters and the out-of-square of square bars measured as the distance between parallel faces across any cross section shall be 75% of total tolerance (plus & minus) specified on the size.	IR	P	R	-	
	c. Weight Tolerance	- Do -	IS 1852 Up to and including 10mm $\pm 7\%$, above 10 to 16mm $\pm 5\%$ & above 16mm $\pm 3\%$	IR	P	R	-	

2. IN PROCESS INSPECTION

S.No	Component / Operation & Description of Test	Sampling Plan with basis	Ref. Doc & Acceptance norm	Record Format	Testing Agency			Remark
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	INPROCESS INSPECTION FABRICATION OF TOWER PARTS		IS 802 Part II/ IS 7215/ approved Drwg.,	Routine Sheet	P	R	-	
(a)	STRAIGHTENING	100%		Routine Sheet	P	R	-	
(b)	CROPPING (CUTTING TO LENGTH)	1st Piece and every 40th Piece	Length Tolerance ± 2 mm The cut surface to be clean, reasonable square & free from distortion	Routine Sheet	P	R	-	
(c)	SECTION SIZE	1 piece at random for each item	IS 802 Part II/ IS 7215/ approved Drwg.,	Routine Sheet	P	R	-	

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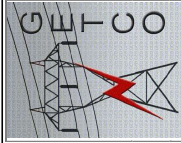
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(d)	STAMPING / MARKING	1st Piece and every 40th Piece	9X16 MM & 0.45 MM Depth (Easily to be seen)	Routine Sheet	P	R	-		
(e)	PUNCHING / DRILLING	- Do -	Punching to be done for thickness up to 12 mm and Drilling to be done for thickness more than 12 mm. Holes near bends to be punched/drilled after bending. Hole should be perpendicular to surface & difference in dia on both sides of flange should not be more than 0.8mm, Hole Ovality not acceptable.	Routine Sheet	P	R	-		
(f)	EDGE SECURITY	1st Piece and every 40th Piece	IS 802 PART II/ IS 7215 / approved drwg.	Routine Sheet					
			For 13.5 mm Dia Hole Sheared Edge 20 MM & Rolled Edge 16 MM						
			For 17.5 mm Dia Hole Sheared Edge 23 MM & Rolled Edge 20 MM						
			For 21.5 mm Dia Hole Sheared Edge 28 MM & Rolled Edge 25 MM			P	R	-	
			For 25.0 mm Dia Hole Sheared Edge 38 MM & Rolled Edge 33 MM /As per Approved Drawing.						
(g)	DRILLING & PUNCHING Hole to Hole Distance/Spacing/Gauge distance	1st Piece and every 40th Piece	Tolerance cumulative and between consecutive Hole shall be within ±2 mm & ±1 mm respectively & ± 0.5 mm Gauge distance.	Routine Sheet	P	R	-		
(h)	NOTCHING, FLANGE, CORNER, BEVEL CUT	1st Piece and every 40th Piece	+ 5.0 mm on specified length of cut operation by shearing upto 12 mm thick and by Gas Cutting for material above 12mm.	Routine Sheet	P	R	-		

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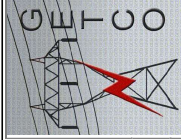
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(i)	HEEL CUTTING	- Do -	For Member > 12 mm thick. Gas cutting to be adopted followed by grinding/Machine cutting. Tolerance on heel cutting length + 10 MM.	Routine Sheet	P	R	-
(i)	BENDING	100%	(i)Angle Sections : Upto 75x75x6 (Upto 10deg)- Cold Bend Upto 100x100x8 (Upto 5deg)- Cold Bend Above 75x75x6 (above 10deg)- Hot Bend Above 100x100x8 (above 5deg)- Hot Bend All HT sections and plates shall be Hot bend. (ii) MS Plates Upto 12mm thick (upto 15 degree)-Cold Bend Others (Any degree) - Hot Bend	Routine Sheet	P	R	-
(k)	Welding /Fitting/ a)Marking,Cutting,Edge Preparation b)Fit Up, Dimensional Control "THIS DOCUMENT IS PROPERTY OF GETCO AND SHALL NOT BE USED OR PASSED ON TO OTHERS WITHOUT WRITTEN CONSENT OF GETCO"	100% 100%	IS 9595 a) As per Drawing/Specification of GETCO b) As per Drawing/ Specification of GETCO	Routine Sheet	P	R	-

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I	PROTO ASSEMBLY Visual & Dimensional Inspection "THIS DOCUMENT IS PROPERTY OF GETCO AND SHALL NOT BE USED OR PASSED ON TO OTHERS WITHOUT WRITTEN CONSENT OF GETCO"	One Structure of each Tower Type.	As per GETCO approved Drawings & BOM. All parameters from (a) to (k) above are checked and record maintained shall be verified by GETCO Inspector before releasing the materials for galvanizing.	Proto Inspection Report	P	W	-	Proto Corrected BOM must be verified and signed by GETCO Inspector & Manufacturer. Deviation in tower member must be clearly indicated in BOM & MOM with tech'cal justification and same shall be thoroughly inspected by GETCO Inspector

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